MERCEDES BENZENE: THE ELITE FOLKLIFE OF PHYSICAL CHEMISTS

Gail Matthews

Most contemporary folklorists believe that members of all societal strata can engage in folkloric behavior; we no longer perceive folklore as occurring only in peasant communities. Following Alan Dundes' widely acknowledged claim that the folk can be "**any group of people whatsoever** who share at least one common factor" (1965:2), we have **intellectually** come to accept a broadened conception of "the folk." However, **emotionally** we still tend to prefer agrarian or blue collar, lower-middle to middle-class laborers as subjects for folkloristic inquiry. Intuitively we seek out modern-day "peasants." It is time to redress the balance; this study concerns the occupational folklife of physical chemistry graduate students, researchers whose lives are resplendent with folklore. However, before examining the world of physical chemistry, let me explore several basic concepts or terms which are pertinent to my study: occupation, folklife, and elite.

Elite Folklife: Uncharted Territory

Robert McCarl defines "occupational folklife" as "the complex of techniques, customs, and modes of expressive behavior which characterize a particular work group" (1978:3). Roger Abrahams notes that folklife results in "an expression of the means by which membership in a community of understanding, judgment is established, maintained, and celebrated" (1978:21). These definitions indicate the expansive nature of occupational folklife. Researching occupational folklife presents enormous difficulties,

similar to those problems encountered by festival specialists; occupational folklore includes many diverse folklore genres. McCarl cites four categories of occupational folklore: technique, gesture, oral expression and custom (1978:17). Gesture, oral expression and custom are relatively self-explanatory; McCarl defines technique as:

> the pattern of manipulations, actions and rhythms which are the result of the interaction between an individual and his or her work environment and which are prescribed by the group and used as criteria for the determination of membership and status within it. (1978:7)

The variety of occupational folkloric categories outlined by McCarl indicates that strict, genre-oriented analysis is an inappropriate means of understanding occupational folklore. A more inclusive folklife approach allows for contextual considerations which are essential to understanding folklore in an occupational setting. McCarl notes that:

> Context here is not viewed as a variable background which influences the nature of interaction; occupational contexts are a part of the interaction itself, i.e. aspects of the occupational environment as they are manipulated by the worker can be and are interpreted symbolically and they therefore can be viewed as a mode of communication. (1978:4)

Occupational folklore constitutes a range of behavior which is essential to occupational identity; learning how to interact in a folkloric social manner is one facet of occupational competence.

The previously described criteria for occupational folklife could theoretically apply to any work environment, yet a casual glance through library card catalogs reveals an overabundance of folkloristic studies about blacksmiths, cabinet-makers, coal miners, textile workers, lumberjacks, dairymen, fishermen and muleskinners. With only a few exceptions, very little research exists on urban occupational folklore, let alone elite occupational folklore. McCarl has worked

extensively with urban fire fighters (1985) and Dundes has studied business offices in his book **Work Hard and You Shall Be Rewarded** (1975). Catherine Swanson published an interesting article on office coffee-break humor (1978:42-47). Three other exceptions of note are: Susan Berkman's investigation of hospital employee narratives (1978), Gary Alan Fine's work with Minneapolis chefs (1985) and William Guinee's research on Chicago bar magicians (1984). Yet even the occasional urban occupational research has slighted elite work situations; we still gravitate towards lower middle to middle-class, relatively uneducated subjects. As scholars, we have neglected to include ourselves among the ranks of "the folk." Abrahams states:

> We have assumed that for lore to persist, a conservative sense of community had to be maintained...But it should be noted that it is not just this type of economic enterprise that produces groups or even communities...there are numerous other occupational situations in which traditional expression takes root. (1978:24)

In fact, Richard Dorson noted in his book **American Folklore and the Historian** that "at some points the intellectual culture does intersect with folklore" (1971:92). Yet the examples which he cites are examples of folklore used by intellectuals to argue or validate pre-existing opinions. This is not intellectual folklore, it is folklore used by intellectuals. Examples of this can be found in the physical chemist's environment; for instance, the Indiana University Chemistry department employs a full-time glass blower, a folk artisan, to blow unique tubing for previously unattempted experiments. In contrast, my conception of elite folklife involves lore which emerges as an integral part of the elite worker's occupation, folklore which is in harmony with elite in-group aesthetics and is created in response to the everyday concerns of elite life.

Similarly, Richard Dorson has also noted the folklore of colleges (1949:671-76). He has docu-

mented many anecdotes about college professors. However, I am no more concerned with folklore about intellectuals than I am with the folklore used by intellectuals; I prefer focusing on the folklore which arises out of and as a response to elite working conditions. Folklore is interwoven within elite life; in order to understand this phenomennon as a whole, it is important to explore the unique characteristics of the group work context. Careful study of elite communities, elite folklife, will produce fascinating investigations into an array of folklore which expresses this group's aesthetics and grapples with the concerns of the community. The result would be a fresh and perhaps surprising perspective on the values, goals, and beliefs of elite culture.

The Work Environment

I observed one research group of physical chemists at Indiana University for two years, between 1982 and 1984. Most of my information has been culled from prolonged contact with this one group of about ten scientists on the fifth floor of the Indiana University Chemistry building. During conversations with these group members, references were sometimes made to the traditions of other scientific groups. I will include references to traditions outside the Indiana University environment when pertinent. Some of the folklore I observed, such as the chemical rebus, is common to all chemists while other traditions result from physical chemistry research, a unique process which involves hours of tedious and frustrating contact with often capricious, technologically sophisticated equipment.

In order to understand the role folklore plays in a physical chemist's life, one must first become familiar with the scientist's work environment, a habitat which differs drastically from that of the humanist. During or after the

first year of graduate work, aspiring scientists join a research group which is supervised by a university professor. The professor oversees experiments and is responsible for obtaining large grants which fund the group's research. The graduate student is assigned a research project; this project comprises merely one facet of the larger group effort, a goal involving ongoing research which could take decades to complete. Because science is the single common denominator, many diverse graduate student personalities are drawn into prolonged daily contact with each other; workers are together as a consequence of profession rather than personality compatibility. Graduate students in physical chemistry often spend 70-80 hours per week in the laboratory and/or office. Conversations often involve discussion of hours worked; the physical chemists I studied seemed to take pride in how many hours they could work per week, and they either mocked or harshly judged those who only worked a forty hour week. There was a general belief that non-scientists did not understand the demands of a research scientist's work and, therefore, sometimes group members felt threatened when a worker opted to put in less time at the lab, thus violating the work ethic. Often group members would attribute the slackening off of another worker to some outside influence, such as an overly demanding girlfriend, mental instability, or even to intellectual incompetence. Workers also gently kid the chemists who put in the longest hours, sometimes setting up pacts with those who overwork which involve promises to take some time off. These promises are invariably broken, much to the glee of the group who joke with the workaholic about not knowing how to take time off.

Offices are shared by as many as four graduate students simultaneously. Physical chemists experience a limited social life as a result of their long, intense work hours and esoteric

knowledge. The all-consuming demands of scientific research make it difficult, at times, to relate intelligibly to the non-science world.

Physical chemistry mandates an added frustration, that of massive and complicated equipment, such as the laser, which requires a specific work place. Very little of the physical chemist's research can be accomplished away from the laboratory. The expense of this equipment, coupled with complicated experiments, makes sharing of equipment necessary, thus divvying up precious lab time. Tensions frequently arise when one graduate student breaks equipment, e.g. cracks a laser's mirror, or is reluctant to share the laboratory, thus delaying the research of fellow group members. The grinding discord of divergent personalities must be effectively alleviated without diminishing group productivity.

The graduate student in physical chemistry simultaneously juggles many diverse occupational roles; within one day he or she may have to be a student, a teacher, an engineer, a repair-person, a technician, an editor, a draftsperson, and a writer. Both Guinee and Fine have noted multiple-role responsibilities in urban occupations. It is difficult to know whether urban professions require more role diversity, or whether folklorists simply are able to perceive this diversity of responsibilities more easily in urban occupations.

The duration of physical chemistry experiments is at times exceedingly long; the scientist babysits a laser for sometimes 14 hours at a stretch. Much of this time is spent waiting: waiting for a gas sample to be pumped down, waiting for a solution to be purified, waiting for an experiment to run its course. Although scientists usually cannot leave their lab during experimental research, the yeoman's share of research time is not spent actively engaged in some form of intellectual activity. Physical chemists routinely experience the phenomenon of

free time within work time, hours in which **homo ludens** can legitimately step forward without fear of reprimand or guilt.

In addition to lasers and other sundry scientific paraphernalia, the scientist is surrounded by blackboards and bulletin boards, initially intended for official use, yet often transformed into play space. Office doors and walls are also frequently decorated to personalize the often sterile building design. The work space becomes a home away from home; door decorations proclaim individual and group member identity.

Mediating Structural Conflict: The Folk Response

With the scientist's work environment in mind, we can now explore the rich and useful forms of folklore which arise out of close quarters and result from the combination of pressure to succeed, frustration due to equipment failure, and "free" work time. The physical chemist is constantly aware of "familiarity breeding contempt," especially occupational familiarity which does not selectively filter out incompatible personalities. Yet this contempt must be dealt with in a socially acceptable manner, which is not destructive to the group system; the same graduate students may have to work in close proximity with each other for four or five years.

The reader is cautioned against interpreting a traditional functional analysis, in which folklore presumably contributes to the good of the system and the system then contributes back to the good of the individual, **ad nauseum**. This perception is flawed in that it presumes the system to be inherently beneficial in its present state; a system does not have to be good, it merely has to produce the desired results. I do believe that much of this folklore contributes to the perpetuation and the survival of the chemistry work group, but not necessarily to the good or health of either the group or its individual members. Some of the adaptive behavior

which I will outline is beneficial, some of it is benign, and some of it is unhealthy, despite its success. However, this article will not judge the merit of these adaptive behaviors. I also do not claim that the adaptive traditions which these chemists have developed are necessarily the only or best responses to this particular environment; I merely point out that the folklore seems to have a purpose and that, in studying the system and the lore, we can gain new insights about cultural values.

E.W. Burgess defines the resolution of group dynamics as the "unity of interacting personalities" (1926:3). Folklore is one means of encouraging unity. According to Abrahams:

> The performing of items of lore in stress situations creates a sense of groupness in itself, especially when lore addresses the common problems of the individuals in that situation... Spatial construction will contribute to the sense of the organic character of the collectivity, thus producing an increasingly shared expressive repertoire. Further, the more goal-oriented and threatening the enterprise in common, the more lore will develop from the experience. (1978:23)

Thus the stressful and intense experience of becoming a physical chemist helps group members develop complementary roles, a shared understanding of the "rules" and an operational group dynamic, all of which combine to produce a fascinating and unique worldview.

The physical chemists I examined coped with stress in several folkloric ways. Group members sometimes turned to a hall bulletin board for creative dispersion of aggression. Relevant comic strips, posted with group member names substituted via white-out and felt tip pen, playfully acknowledged annoying habits. The cartoon character Garfield provided a vehicle for criticizing a backwoods Appalachian scientist known for his loud voice, swine-like table manners, hard-headedness, and naivete. Another cartoon character bore the blows for a group member whose **perpetuum mobile** strained the nerves of all group members. Two other male scientists,

renowned for their preoccupation with the opposite sex, are immortalized in a slightly altered edition of "Frank and Ernest." These posted comic strips allow individual personality difficulties to be publicly recognized and processed. Although moderately peeved at times by caustic humor, the victims of these public announcements tolerate the posting of the comic strips and appear to treat them as though they signify group acceptance. Catherine Swanson states:

> In terms of an integrative function, recreative behavior in an occupational setting may also give meaning to a specific situation for a group. In particular, joking becomes the collective generated expression that makes sense of the work situation. (1978:45)

James Spradley also discusses the joking response, stating that "structural conflict creates powerful but often ambivalent feelings... conflict [is] mediated, in part, by the joking aspect of this complex [occupational] relationship" (1975:89).

Humor, however caustic, helps group members avoid secretive and derisive gossip. Group members sense that they have little control over another individual's defects of character and that serious confrontation would be frustrating and unproductive. Yet these scientists are not devoid of emotion; they must find some conduit for their feelings of anger and hostility. Abrahams acknowledges joking as a cathartic endeavor which achieves "simultaneous identification and distancing" (1969:115). On occasion, a group member will refuse to diffuse hostilities in a manner acceptable to the group, thereby disturbing the balance and threatening the survival of the system. The others will then judge that member as being insecure or malicious. Phillip Slater describes such an individual as a "Task Specialist":

> A compulsive concentration on an abstract problem will serve as an intellectual shield against the ambiguity of human feelings. Needs to express hostility may be channeled into aggressive and

dogmatic problem-solving attempts... When these motives determine the assumption of a specialized role in a group, the outlook for this group will seem to be poor. (Slater 1955:513)

I observed one "Task Specialist" who relied solely on serious verbal hostility, whining, and using complaints as a means of dealing with personality conflict. As a result of her refusal to express hostility in a playful manner, she was generally ostracized and disliked; she threatened the stability and harmony essential to a productive work environment. The "Task Specialist" fails to master an important occupational skill, that of the "joking relationship" in which a worker is sometimes "required to tease or to make fun of the other, who, in turn, is required to take no offense" thus establishing an instance of "permitted disrespect" (Radcliffe-Brown, 1965:90-91).

Not all work frustrations result from personality clashes. Physical chemists must also interact with their scientific apparatus. Laser equipment is quite often capricious, frequently failing to operate at crucial moments, malfunctioning for unknown reasons which may take weeks to determine. The physical chemists I studied joked about the necessity of bleeding on one's equipment before it would operate properly. Physical chemists often develop such quasi-religious beliefs. It is difficult to determine to what extent the enactment of these beliefs is serious or playful. Workers who accidently cut themselves would run to their laser and allow some blood to flow on it, performing this ritual with feigned importance so that all group members would notice the act. This ritual was their attempt to cope, albeit humorously, with mechanical malfunctions which were, despite vast modern-day technology, still largely inexplicable.

Occupational folklore does not always serve as a resolution of structural conflict. The ubiquitous blackboards are sometimes utilized during "free" work time (i.e. the time spent

babysitting an experiment) to transmit visual riddles especially tailored to the chemical environment. Michael Preston has dubbed this form of riddle the "chemical rebus" (1982:117). For instance, a bored physical chemist might go to the office blackboard and write  , asking other office mates "do you know what this is?" Some office members may feign ignorance, some may shout out "Mercedes Benzene," much to everyone's amusement. A chain reaction may be sparked, in which each office member has a favorite chemical rebus to try out on the others. For the benefit of an uninitiated folklorist, the chemists explained that  is one form of scientific notation for benzene, a clear, flammable liquid used to manufacture a variety of chemical products, including DDT. Inserting the Mercedes Benz insignia  into the scientific notation for benzene creates a visual riddle which could only be resolved with the knowledge of <u>two</u> codes -- those of American popular culture and scientific notation. Group members have to use two codes simultaneously to decipher the chemical rebus.

A testimonial to the popularity of chemical rebi is that, during a brief 45 minute visit to the chemistry building I collected over 35 chemical rebi. Perhaps the chemical rebus is attractive to graduate students because it creatively relates or integrates their esoteric world of science with popular culture and everyday life. The riddles are not performed in order to confound the riddlees (who usually already know the answers), but rather to affirm bi-cultural competency and reintegrate group members with the predominant non-elite culture. The chemical rebus symbolically makes whole again the lives of scientists who are frequently torn between professional goals which require immersion in obscure scientific terminology and the desire to remain connected with everyday life.

Meanwhile, down in the freshman chemistry office, scores of these same rebi are posted on a billboard for another purpose. Undergraduates use chemical rebi to play with recently acquired knowledge, sometimes to affirm a conceptual mastery which is exceedingly difficult. If a student can play with these esoteric terms, insecurities about working with the terminology are dispelled. For the graduate student, in contrast, the visual riddles are familiar friends who help facilitate psychological integration and in-group amusement. (See Appendix)

In addition to visual riddling, physical chemists also take photographs of each other during the infamous "free" work time. These photographs are subsequently taped to hall walls and office doors. For many scientists, co-workers constitute the only feasible social group. Long work hours mandate the establishment of a home away from home; there is a strong impulse to personalize the often sterile work place. Ken Pimple has also noted this personalization and identity assertion in dorm door decorations (1986). Photos of fellow group members, often snapped at inopportune moments, decorate the work area. These photographs are reminiscent of a "family album" or shrine. Just as the family refrigerator door is sometimes transformed into a family museum, covered with mementos which signify shared experiences and express familial identity, office doors are covered with snapshots which recall playful moments, former group members who have graduated, and "typical" shots of individuals.

Cartoons, mailing labels, posters and other paraphernalia are also posted on office doors. When I was first getting to know this group of physical chemists, they asked me to guess which office member had posted which item. They believed that each item could only have been posted by one group member; the act of affixing something to an office door often is a public affirmation of an identity which has already

been conceived within the group.

I noticed that the members of this research group, which also operated as a social group, developed unique and distinctive group persona. These persona interacted to create a coherent group or "gang" personality. F. Thrasher describes this small group phenomenon:

> Every group member of a gang tends to have a definitive status within the group.... As the gang develops complex activities, the positions of individuals within the group are defined and social roles become more sharply differentiated. As a result of this process there arises a more or less efficient and harmonious organization of persons to make possible a satisfactory execution of collective enterprises and to further the interests of the group as a whole. (1955:40)

Thus emergent personas, although akin to stereotypes, integrate physical chemists into the group. Complementary roles emerge, as a group may only be able to accommodate one "comic," "athlete," "lover," "philosopher," "political conservative," "Christian," or "radical." I was fascinated to find that the personas rarely concurred with the exoteric stereotype of chemists as unemotional, physically inept nerds. Apparently, these physical chemists sought out characteristics in each other which dispelled or went against out-group perception. When developing group roles, the physical chemists I studied looked for exceptional characteristics in their fellow group members. Abrahams notes this interaction between exoteric stereotypes and esoteric role identification:

> Certain occupational as well as social groups are regarded as more strange either because of the special skills involved... or because of the deviant or marginal status of its members. Such a perception by themselves and by outsiders will inevitably affect how members choose to express membership when together, both in private and public. (1978:27)

Individual identity within the group helps dispel negative out-group stereotypes, not for outsiders, but for in-group members who do not like the stereotype which society has chosen for

them. Thrasher states that, in small group behavior:

> Every person in the group has his characteristic function with reference to others or, to put it another way, fills the individual niche that previous experience in the gang has determined for him. Lacking the group, personality in the sense here used would not exist.... Yet the action pattern which characterizes each group can hardly be thought of as rigid and static; for it must be constantly changing to accommodate losses and additions of personnel, changes in its members due to growth and increasing experience, and other changes within and without the gang. (1955:40)

Persons within the group must be flexible; each year several group members obtain their doctorates and leave.

After years of time invested in a demanding and frustrating work environment, physical chemists often leave their mark, both figuratively and literally, on the work place before moving on. Upon defending their dissertations, the physical chemists I studied opened champagne bottles in such a way as to dent the soft, sound absorbent hall ceiling with the corks. The dents were then initialled in pen by the new doctoral recipients for posterity. This group's ritual paled by comparison, however, with a group I was told about at the Universität Göttingen in Germany.

In Göttingen a cart would be made for the impending graduate. After a successful defense the new graduate would be wheeled through the city streets. Balloons were filled with hydrogen and oxygen, then exploded with fire. The ubiquitous caustic humor is extant even in this moment of triumph, for the German doctoral recipients were forced to visit a particular statue of a woman, climb up on the figure, and kiss it. During the post-defense revelries which followed, the graduate was forced to wear a hat which was tailor made to represent his or her personality quirks. For one individual the hat was shaped like a CO_2 laser labeled with the logo "Lumaniacs," a parody of the laser manufacturer "Lumonics." This particular physical chemist

was renowned for his pungent-smelling, fungus-infected feet, the odor of which permeated any room he occupied for more than a few hours. In honor of his podiatric affliction two socks were affixed to his graduate's hat. The chapeau was presented to him filled with cheap wine to commemorate his stinginess at "bring your own" social gatherings. Thus, even graduation festivities utilize caustic humor which was originally a survival skill for dealing with pre-graduation in-group stress. This German group did not allow as much chiding and horseplay as American groups within everyday interaction. My data suggests that the more formality which a research group requires in daily work, the more likely rites of passage will be celebrated with liminal, anti-structural activity.

Clearly much more research needs to be done with elite folklife. There are many interesting yet relatively unexplored topics: for instance, the differences between humanist and scientist occupational group behavior, a comparison between pre-professional elite graduate student folklife and post-graduation professional folklife, the folklife of archaeological expeditions, the folklife of architecture students, the folklife of political and technological think tanks, medical student folklore, and folklore generated by the computer era. These are just a few suggestions that come to mind; a rich mine of folkloric behavior surrounds us, and we engage in it daily, yet it remains largely untapped.

In studying elite folklife, this preliminary survey has revealed several focal points which are essential to achieving an in-depth understanding of this kind of data. Particular attention should be paid to: the work space, group interaction, multiple role adoptions, the relationship between work and play, the group's aesthetic, and the group's perception of self.

I hope this preliminary investigation of physical chemists has brought the reader to a

more sophisticated understanding of the stresses, aesthetics, and values of this scientific community. The study of elite folklife may show that this form of occupational folklore holds much in common with the folkloric behavior of other social groups. Perhaps a better understanding of ourselves and our own folklore will strengthen studies which we perform of predominantly non-elite groups; we will know more about the similarities and differences of adaptive techniques for a wider range of work contexts. These traditions, when analyzed within their occupational settings, unveil playful solutions to structural conflict and offer a glimpse into the souls and minds of people who might have remained stereotpyes.

Note

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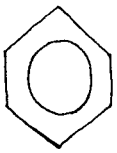
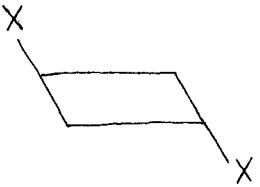
Appendix I: Chemical Notation

Basic terms in scientific notation which are used in chemical rebi:

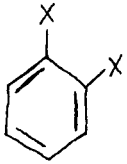


benzene

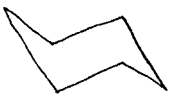
cis (two additions on the same side of a molecule)



trans (additions on opposide sides of a molecule)



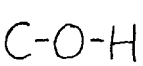
ortho (an addition on any two consecutive sides)



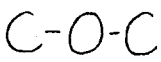
chair (formation of a molecule)

acid

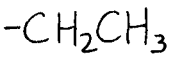
amin(o)



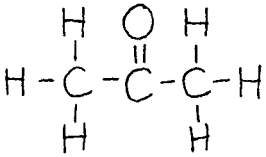
alcohol



ether

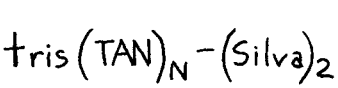


ethyl

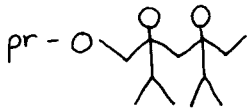


ketone

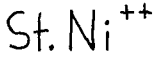
Appendix II:
The Chemical Rebi (Visual Riddles):



Tristan n'de Silva

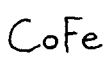


Propyl People Ether

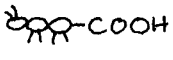


Saint Nicholas
(Ni = Nickel;
++ = -ous)

Tennis, Anyone?
(Sn = Tin)

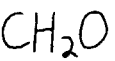


Coffee

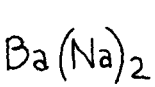


Ant acid

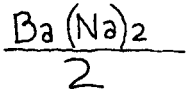
bye-bye



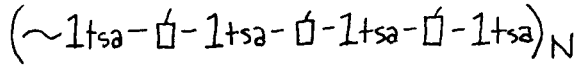
(C) Sea Water



Banana



Have (half) a Banana



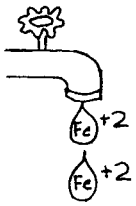
Poly Wants a Cracker ("poly" denotes multiple repetition of a portion of a molecule, signified by unknown number N.)

Philosopher's Stone Discovered (an alchemical joke)
(Al = Aluminum, Cu = Copper, Cl = Chlorine, **Au = Gold**)

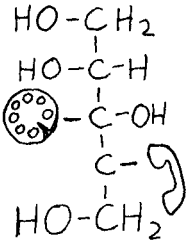
It's A Mean Old World
(amino)

Co Chair Man

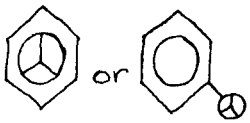
Co Bol (ball)
(Co = Cobalt)



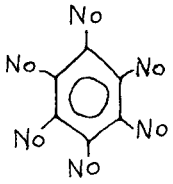
Ferrous Fawcett
(Fe++ = ferrous)



Xylo phone (xylo denotes another kind of molecule formation)

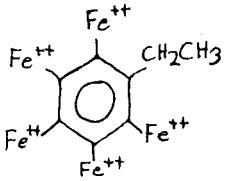


Mercedes Benzene

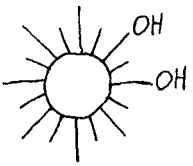


Contraception
("no" in every position)

Orthopedic
(Ortho = adjacent positions)



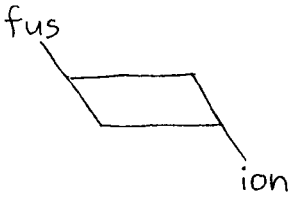
(ethyl) Ethel on a
(ferrous) Ferris Wheel



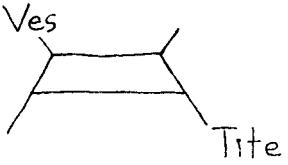
Sun Dial (diol)

(ethyl) Ethel Mermaid

Carbon Eel (carbonyl)

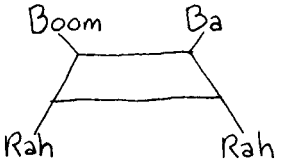


Trans Fusion

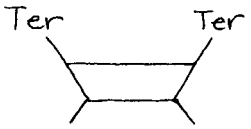


Transvestite

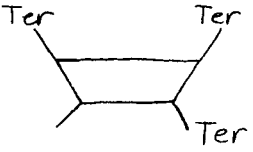
Periodic Table
(HIO_4 = periodic acid)



Rah Rah Cis Boom Ba



(cis) Sister



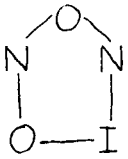
Trans (cis) sis (ter) tor

Hi Ho Ag

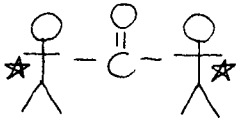
Hi Ho Silver

$E\text{-}D\text{-}NH_2$

Idi Amin (amine)



Onion Ring



(ketone) Keystone Cops

School = H_2S

School Stinks
(H_2S smells)